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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/577,032	05/23/2000	Kunihiro Tashiro	1324.64102	3410

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EXAMINER	
DUONG, THOI V	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 04/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/577,032	TASHIRO ET AL.	
	Examiner	Art Unit	
	Thoi V Duong	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-9 and 17-20* ~~is~~/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1 and 2* ~~is~~/are allowed.

6)☒ Claim(s) *4-7,9 and 17-20* ~~is~~/are rejected.

7)☒ Claim(s) *8* is/~~are~~ objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the Amendment filed January 05, 2004.

Accordingly, claims 1, 2, 5, 7, 9 and 17 were amended, and claims 3, 10-16 and 21-56 were cancelled. Currently, claims 1, 2, 4-9 and 17-20 are pending in this application.

2. The indicated allowability of claim 20 is withdrawn in view of the newly discovered reference(s) to Nishiguchi et al. (USPN 6,226.067 B1). Rejections based on the newly cited reference(s) follow.

Response to Arguments

3. Applicant's arguments with respect to claims 4-7, 9 and 17-19 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by Kashimoto et al. (USPN 5,844,645).

As shown in Figs. 3 and 5, Kashimoto et al. discloses a liquid crystal display comprising:

two substrates 10 and 20 sandwiching liquid crystal 50 and opposing to each other;

a main seal 40 attaching the two substrates at an external peripheral portion of a display area 15 of the substrates; and

a frame-shape structure 23B, 25B formed in the area between the main seal 40 and the display area 15; and

a black matrix picture-frame 26 shading an area between the main seal 40 and the display area 15,

wherein an external peripheral end of the frame-shape structure 23B, 25B and an external peripheral end (lower end) of the black matrix picture frame are formed to coincide with each other viewing from a perpendicular direction to the substrates; and

6. Claims 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishiguchi et al. (USPN 6,226.067 B1).

Re claims 17 and 18, as shown in Figs. 8-10, Nishiguchi et al. discloses a liquid crystal display (LCD) comprising:

two substrates 1a and 1b attached opposing each other;

a sealing material 7 formed outside a display area having a plurality of pixels for sealing liquid crystal between two substrates; and

a plurality of structures 3 formed inside the display area of the substrate 1b for controlling spreading of liquid crystal LC (col. 8, lines 32-36),

wherein, as shown in Fig. 21b, the liquid crystal 5 is dropped on the substrate 1b; and

wherein the plurality of the structures are distributed on the substrate at a predetermined arrangement density or a predetermined arrangement shape (col. 8, lines 26-36).

Re claim 19, Nishiguchi et al. further discloses that the sealing material 7 (wall-like structure) may have a multilayer structure of two layers, inner layer and outer layer, as shown in Fig. 30a (col. 16, lines 14-16). It is inherent that the inner layer of the sealing material 7 has a wall-like structure (or convex shape structure) provided in a frame shape between the outer layer of the sealing material 7 and the display area, on the substrate 1.

Re claim 20, Nishiguchi et al. also discloses that the sealing material 7 (wall-like structure) may have a multilayer structure of three layers (inner layer, middle layer and outer layer) (col. 16, lines 14-16). It is inherent that a hollow frame-shape sealing material is formed by the middle layer and the outer layer of the sealing material 7 at an external periphery of the inner layer of the sealing material 7 for functioning as suction in an atmosphere since this multiplayer structure provides stronger support for the substrates and improve the air-tightness seal of the element (col. 16, lines 16-23).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzukii et al. (USPN 5,739,880) in view of Miyamoto et al. (JP 03-36525) and Hasegawa et al. (JP 09-090383).

As shown in Fig. 5(a), Suzuki et al. discloses a liquid crystal display comprising:

a sealing material made of an epoxy resin (photo-curing type material) sealing liquid crystal sandwiched between two substrates SUB1 and SUB2 (col. 6, line 66 through col. 7, line 3);

a shading film BM formed on the substrate SUB2; and

a transfer AGP (silver paste material) formed at the lower portion of the shading film BM, and electrically connected to the two substrates (col. 7, lines 3-8).

However, Suzuki et al. does not disclose a transfer having colored particles and a light incident hole opened at the shading film above the transfer.

As shown in Fig. 2, Miyamoto et al. discloses a liquid crystal display comprising a transfer 4 formed by incorporating color tones into silver paste to obviate the degradation of the display in the sealing region (see Abstract). Meanwhile, as shown in Figs. 5 and 8, Hasegawa et al. discloses a liquid crystal display comprising a light transmitting part (hole filled with transparent material) 53 formed at the shading film 43b in the application of a UV-curing sealing material 57 to surely harden the sealing material in a short time (see Abstract).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display of Suzuki et al. with the teachings of Miyamoto et al. and Hasegawa et al. by forming a transfer having colored

particles and a light incident hole opened at the shading film above the transfer so as to obviate the degradation of the display in the sealing region (Abstract), and to surely harden the UV-curing sealing material and prevent liquid crystal from being polluted by non-hardened sealing material (Abstract).

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kashimoto et al. (USPN 5,844,645) as applied to claim 5 in view of Anderson et al. (USPN 6,067,142).

Kashimoto et al. discloses a liquid crystal display that is basically the same as that recited in claim 6 except for a perpendicular alignment film. As shown in Fig. 1A, Anderson discloses perpendicular alignment films 10 formed on substrates 14 for making wide-viewing angle displays (col. 1, lines 13-25). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display of Kashimoto et al. with the teaching of Anderson et al. by forming a perpendicular alignment film on a substrate so as to obtain a display with wide-viewing angle (col. 1, lines 1-2).

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kashimoto et al. (USPN 5,844,645) as applied to claim 5 in view of Nishiguchi et al. (USPN 6,226,067 B1).

Kashimoto et al. discloses a liquid crystal display that is basically the same as that recited in claim 7 except for a second frame-shape structure formed in an external area from the main seal. As shown in Fig. 30, Nishiguchi et al. discloses a sealing material 7 having a multiplayer structure of two layers, inner and outer layers.

Accordingly, the inner layer and the outer layer may be considered as a main seal and a second frame-shape structure respectively. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display of Kashimoto et al. with the teaching of Nishiguchi to form a second frame-shape structure surrounded the main seal in an external area from the main seal so as to provide stronger support of the substrates and improve the reliability of the display (col. 16, lines 14-23).

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishitaka et al. (USPN 6,233,031 B1) in view of Hasegawa et al. (JP 09-090383).

As shown in Fig. 7, Kijima et al. discloses a LCD comprising:

a sealing material 13 sandwiched between two substrates 11 and 12 and having a portion overlapping with a shading film formed between color filter 28; and

a light-reflection layer 22 having a concave-convex structure which has inclined surfaces and formed in an area to be under the sealing material on the substrate.

However, Ishitaka et al. does not disclose a sealing material made of a photo-curing type material and having a portion overlapping with a shading film and an opening portion viewed from a direction vertical to the substrates.

As shown in Fig. 5, Hasegawa et al. discloses a light-transmitting part 53 (opening portion viewed from a direction vertical to the substrates) formed on a UV-curing sealing material 57 in the peripheral part of a shading film 43b in such a manner that irradiation of UV rays on the sealing material is not intercepted (Abstract). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention

was made to modify the LCD of Ishitaka et al. with the teaching of Hasegawa et al. by forming a UV-curing sealing material having a portion overlapping with a shading film and an opening portion viewed from a direction vertical to the substrates to surely harden the sealing material in a short time, and hence to improve productivity (Abstract).

Allowable Subject Matter

12. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: none of the prior art of record fairly suggests or shows all of the limitations as claimed. Specifically, none of the prior art of record discloses, in combination with other limitations as claimed, a part of all of the second frame-shape structure formed in the black matrix picture frame and black matrix is not formed on the seal formation area.

The most relevant reference, JP 11-119230 of Shimano, fails to disclose or suggest a part of a second frame-shape structure formed in a black matrix picture-frame. The Shimano's reference discloses a pillar-shape structure, instead of frame-shape structure, formed in a black matrix picture-frame in an external area from the main seal, wherein the black matrix is not formed on the seal formation area.

13. Claims 1 and 2 are allowed.

The following is an examiner's statement of reasons for allowance: none of the prior art of record fairly suggests or shows all of the limitations as claimed. Specifically,

Re claim 1, none of the prior art of record discloses, in combination with other limitations as claimed, a blue-colored layer, a red-color layer and a green-color layer formed at an area of a shading film, wherein only the blue-colored layer is in contact with the sealing material.

The most relevant reference, USPN 5,910,829 of Shimada et al., fails to disclose or suggest that only the blue-colored layer is in contact with the sealing material. In Fig. 14, Shimada et al. shows a blue-colored layer B being in contact with the sealing material 133; however, there are only one blue-colored layer formed at an area of the shading film 134. In Figs. 15 and 16, Shimada et al. shows a blue-colored layer B, a red-color layer R and a green-color layer G formed at an area of the shading film 134a; however, the blue-colored layer B and the red-color layer R are in contact with the sealing material 133.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (571) 272-2293.

Thoi Duong

04/03/2004

DUNG T. NGUYEN
PRIMARY EXAMINER